



Grade 5 Science
Unit # 1- Physical Science
Topic 1 Properties of Matter – 18 Days

Unit Overview: In **Topic 1**, Students will learn there are different states of matter and matter has different properties in each of the states. Students will perform investigations that demonstrate how properties of matter either change or remain the same after certain types of reactions. In **Topic 2** students will learn how to identify a chemical change. Students will also investigate the principle of matter conservation. Students will discover that matter might change but the amount of matter does not.

Topic Essential Question: How do you describe properties of matter?

Lessons

- Topic Launch/Quest Kickoff
- Lesson 1 Observe Matter
- Lesson 2 Model Matter
- Lesson 3 Properties of Matter
- Topic Close –Assessment, Quest Findings

NYSSLS Performance Expectations

5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.]

5-PS1-3. Make observations and measurements to identify materials based on their properties. [Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.] [Assessment Boundary: Assessment does not include density or distinguishing between mass and weight.]

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Topic Opener

PE: 5-PS1-1; 5-PS1-3

SEP: Developing and Using Models; Planning and Carrying Out Investigations; Constructing Explanations and Designing Solutions

DCI:

PS1.A - Structure and Properties of Matter

- Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1)
- Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3)

Savvas

Highlighted labs are important to the understanding of the instructional concepts in this lesson and must be completed during Science instructional time.

- **uConnect Lab – What’s in the box?**
- Quest Kickoff – Identify the Mystery Material
- Leveled Readers
- STEM Engineering Reader
- Reading Check – Use Evidence From Text

<p><u>Lesson 1 – Observe Matter</u> PE: 5-PS1-3 SEP: Developing and Using Models; Planning and Carrying Out Investigations DCI: PS1.A - Structure and Properties of Matter</p> <ul style="list-style-type: none"> ● Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1) ● Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3) <p>CCC: Scale, Proportion, and Quantity</p>	<p>Savvas Guiding Objective</p> <ul style="list-style-type: none"> ● Students will observe and measure properties of matter <p>Literacy Skill</p> <ul style="list-style-type: none"> ● Use Evidence From Text <p>Vocabulary</p> <ul style="list-style-type: none"> ● observe ● measure ● solubility describe <p>Academic Vocabulary</p> <ul style="list-style-type: none"> ● describe <p>Connect - TE/SB p. 6</p> <ul style="list-style-type: none"> ● Local to Global Connection <p>Investigate - TE/SB pp. 7-11</p> <ul style="list-style-type: none"> ● <i>uInvestigate Lab – How do we describe materials?</i> ● Video – Measuring Substances ● <i>uBe a Scientist</i> ● Science Practice Toolbox – Asking Questions ● Visual Literacy Connection – Can you tell them apart? <p>Synthesize - TE/SB pp. 12, 15</p> <ul style="list-style-type: none"> ● Interactivity – Measuring Matter <p>Demonstrate – TE/SB pp.13-14</p> <ul style="list-style-type: none"> ● Lesson 1 Check ● Lesson Quiz 1 ● Quest Check-In Lab – How can you observe matter?
<p><u>Lesson 2 – Model Matter</u> PE: 5-PS1-1; 3-5-ETS1-1 SEP: Developing and Using Models; Constructing Explanations and Designing Solutions DCI: PS1.A - Structure and Properties of Matter</p> <ul style="list-style-type: none"> ● Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1) ● Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3) 	<p>Savvas Guiding Objective:</p> <ul style="list-style-type: none"> ● Students will explain that matter is made of tiny particles too small to be seen <p>Vocabulary</p> <ul style="list-style-type: none"> ● atom ● atomic theory ● compound ● molecule <p>Academic Vocabulary</p> <ul style="list-style-type: none"> ● conclude <p>Connect - TE/SB p. 16</p> <ul style="list-style-type: none"> ● Engineering Connection <p>Investigate - TE/SB pp. 17-21</p> <ul style="list-style-type: none"> ● Video – How to Model Matter ● <i>uInvestigate Lab – How can you detect matter without seeing it?</i> ● <i>uBe a Scientist</i> ● Literacy Toolbox – Use Evidence from Text ● Quest Connection ● Visual Literacy Connection – What is the matter?

Grade 5 Unit I Physical Science

<p>ETS1.A - Defining and Delimiting Engineering Problems</p> <ul style="list-style-type: none"> • Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1) <p>CCC: Scale, Proportion, and Quantity</p>	<p>Synthesize - TE/SB p. 21</p> <ul style="list-style-type: none"> • Interactivity – Matter is Everywhere <p>Demonstrate – TE/SB pp. 22-23</p> <ul style="list-style-type: none"> • Quest Check-In Lab – How do you know that matter is still there? • Lesson 2 Check • Lesson 2 Quiz
<p>Lesson 3 – Properties of Matter</p> <p>PE: 5-PS1-3</p> <p>SEP: Constructing Explanation and Designing Solutions</p> <p>DCI:</p> <p>PS1.A - Structure and Properties of Matter</p> <ul style="list-style-type: none"> • Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1) • Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3) <p>PS1.B - Chemical Reactions</p> <ul style="list-style-type: none"> • When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-4) • No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5- PS1-2) <p>CCC: Scale, Proportion, and Quantity</p>	<p>Savvas</p> <p>Guiding Objective:</p> <ul style="list-style-type: none"> • Students will identify materials based on their properties <p>Vocabulary</p> <ul style="list-style-type: none"> • temperature • mass • volume <p>Academic Vocabulary</p> <ul style="list-style-type: none"> • Organize <p>Connect - TE/SB p. 26</p> <ul style="list-style-type: none"> • Stem Connection <p>Investigate - TE/SB pp. 27-29</p> <ul style="list-style-type: none"> • <i>Investigate – How can you use properties to identify solids?</i> • Video – Properties of Matter • <i>Be a Scientist</i> • Virtual Lab – Properties of Matter • Interactivity: Measuring Matter <p>Synthesize - TE/SB pp. 30-31</p> <ul style="list-style-type: none"> • Interactivity – Matter and its Properties • Connecting Concepts Toolbox – Stability and Change • Quest Connection <p>Demonstrate – TE/SB pp. 31 - 33</p> <ul style="list-style-type: none"> • <i>Quest Check-In Lab - How can you prepare the properties of matter?</i> • Lesson 3 Check • Lesson 3 Quiz • Quest Findings – Identify the Mystery Material
<p>Topic Close</p> <ul style="list-style-type: none"> • Topic Assessment and Remediation TE/SB pp. 36-39 • Quest Finding and Reflection TE/SB p. 34 	<p>Topic 1 Enrichment</p> <p>Topic 1 - Lesson 1 Enrichment</p> <ul style="list-style-type: none"> • Enrichment Activity TE p. 12 • Solve it with Science – Looking for Clues TE/SB pp.15 <p>Topic 1 - Lesson 2 Enrichment</p> <ul style="list-style-type: none"> • Enrichment Activity TE p. 21 <p>Topic 1 - Lesson 3 Enrichment</p> <ul style="list-style-type: none"> • Enrichment Activity TE p. 29 • Career Connection – Robotics Engineer TE/SB pp.35

<p>English Language Learners (ELL) Enhancements To access hyperlinked material, you must be logged into your BPS Google Drive</p>	<p><u>Listening</u></p> <ul style="list-style-type: none"> ● <u>Cross- Linguistic Practices</u>: Gives students opportunities to make connections between what they hear and their home language (For example, allow students to listen to a passage and identify cognates). ● <u>Activating Prior Knowledge</u> Activating prior knowledge means both eliciting from students what they already know and building initial knowledge that they need in order to access upcoming content. ● <u>Visuals</u> - GIFs, pictures- will assist students in understanding what they are listening to. Use <u>visual thinking strategies</u> to set the lens for learning. ● Video to review or introduce a topic – use <u>closed captioning</u> to help students see the words and pronunciations while they listen to the content. ● <u>Word stretching / Vowel stretching</u> when instructing allows students to listen closely to the pronunciation of the word. ● <u>Performance Level Descriptors</u> this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of listening. Scroll for grade 5. <hr/> <p><u>Speaking</u></p> <ul style="list-style-type: none"> ● <u>Sentence Stems/Frames</u> - to begin a sentence - such as <i>Evolution is...</i> or <i>I think that evolution is...</i> ● <u>Academic Conversation Starters</u>: Have a visual of a list of academic sentence starters that students can refer to in a discussion. ● <u>Choral Reading</u> - To build fluency, self-confidence and motivation with reading/speaking. ● Create <u>movement</u> to go with the word. Movement can be a motivating factor, as well as a kinesthetic tool for conceptualizing the rhythm and flow of fluent reading while triggering brain function for optimal learning. ● <u>Performance Level Descriptors</u> This document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of speaking. Scroll for grade 5. <hr/> <p><u>Reading</u></p> <ul style="list-style-type: none"> ● Supplementary Text to help reinforce concepts. ● <u>Visual Aids</u> - Pictures or models to support vocabulary words and concepts ● Video to review or introduce a topic - use <u>closed captioning</u> to help students read along while they listen to the content. ● <u>4 Square / Frayer models</u> to help students gain a deeper understanding of vocabulary. ● <u>Highlighting</u> important text to assist students in answering questions after the reading. ● <u>Chunking</u>-Break reading of text into chunks or paragraphs ● <u>Vocabulary Morphology</u>- Morphology relates to the segmenting of words into affixes (prefixes and suffixes) and roots or base words, and the origins of words. Understanding that words connected by meaning can be connected by spelling can be critical to expanding a student’s vocabulary. ● <u>Performance Level Descriptors</u> this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of reading. Scroll for grade 5. <hr/> <p><u>Instructional Accommodations (depending on the student’s needs)</u></p> <ul style="list-style-type: none"> ● Extended time for tests in class, projects and assignments ● Directions read. Broken down as necessary ● Model how to complete the activity in the lesson ● Oral simplification of directions or questions ● Translated version of test when available. Student may have both version English and native language version ● Use of <u>approved bilingual glossaries</u> from NYS in each subject
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<p>Special Education Modifications</p> <p>Special Education students must have accommodations as per Individual Educational Plan (IEP)</p>	<p><u>Instructional</u></p> <ul style="list-style-type: none"> ● Pre-teach vocabulary ● Use picture vocabulary ● Scaffold Depth of Knowledge questions ● Provide copy of notes/notes in “cloze” form ● Use of Think, Pair, and Share strategy to help process information ● Scaffold written assignments with the use of graphic organizers ● Allow for multiple ways to respond (verbal, written, response board) ● Provide model of performance task ● Modify informational text to fit the needs of the students ● Provide a digital or paper interactive notebook ● Present complex tasks in multiple ways ● Provide mnemonic strategies for scientific concepts <hr/> <p><u>Technology:</u></p> <ul style="list-style-type: none"> ● Audio reading of text ● Text to type functions ● Videos to clarify/visualize science concepts ● Record class lecture/discussions and make accessible to student ● Nearpod- interactive presentations of notes <hr/> <p><u>In Class Assessments</u></p> <ul style="list-style-type: none"> ● Provide multiple options for projects ● Use of timer in class ● Break all complex tasks into chunks
<p>Step Up to Writing</p> <p>Step Up to Writing Materials can be found in BPS Science K-12 Schoology Folder Grade 5 Resources Grade 5 SUTW materials</p>	<ul style="list-style-type: none"> ● Easy Two-Column Notes ● Breaking Down Definitions ● Paragraph Frame- What I Learned ● <u>Performance Level Descriptors</u> this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of writing. Scroll for grade 5.
<p>Culturally and Linguistically Responsive Teaching (CLRT) in the Science Classroom</p>	<ul style="list-style-type: none"> ● Materials, resources, and/or discussions address diverse cultural backgrounds and real-world applications ● Artifacts (posters, charts, etc.) in the science classroom are representative of the cultures of the student population ● All students are given an opportunity to engage in science discourse ● Teacher demonstrates high expectations for all students